



An Architect's Library of 1890

Celebrating 100 Years of Architecture and 25 Years of Landscape Architecture
at the University of Toronto





From Vitruvius Pollto, *De Architectura Libri Decem*, 1567.



The church of St. Martin-in-the-Fields, from Gibbs's, *A Book of Architecture*.

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*An Exhibition in the Thomas Fisher Rare Book Library
University of Toronto*



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University of Toronto

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Foreword

Confining this exhibition to the Architect's Library of 1890 was an innocently logical decision, but one cannot help speculating on how different its contents might have been, how few of the present exhibits would have been included, if the architect's library of 1990 had been the topic. The early decades in the life of the School may have seemed quiescent enough to the architects of Upper Canada, assured of both their program and the appropriate forms for its expression in this burgeoning outpost of British hegemony, and such a library as we see here might well have sufficed, survived quite intact, the advent of Cubism, World War I, the Russian Revolution, l'Esprit Nouveau, and even beyond.

But, John Root built the Monadnock Block in Chicago in the year of the School's beginning. In 1890, Loos was twenty and *Ornament and Crime* lay only eighteen years ahead, Perret was preparing to enter the Ecole des Beaux-Arts a year later, van Doesburg and Gropius were seven-year-olds, van der Rohe was four, Le Corbusier three, and Rietveld and Sant Elia two, while El Lissitzky and Oud were born in this year. Aalto was born in 1898, Kahn in 1901, and Terragni, whose work provides the most critical architectural underpinning for the current preoccupation with Deconstructionism, in 1904. 1910 saw the first major publication of Wright's Prairie Houses and Le Corbusier studying the decorative arts in Germany, working for Behrens and close to completing his four-year Grand Tour with his momentous *Voyage d'Orient*, to be published only posthumously, in 1966.

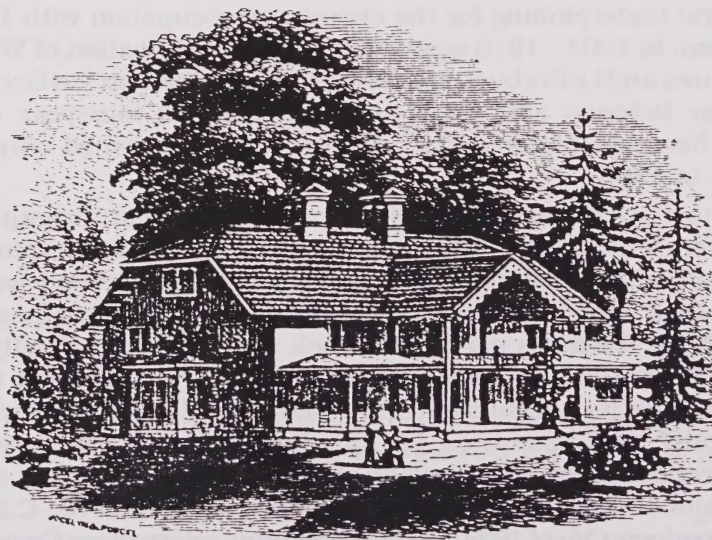
So, within just two decades of architectural instruction in Toronto, there was a far from assured or quiescent domain of architecture looming over the horizon and the major players of the Modern Movement were all engaged in their various preparations for its re-making and propagation, which, with the insidious aid of Hitchcock and Johnson's deadly little book of 1932, would simultaneously foster its North American acceptance and reduce its radicalism to *The International Style*. This work, it may be noted, was sponsored by that bastion of architectural and urbanistic conservatism, the Museum of Modern Art in New York, as was the first major counter-attack to the urban propositions of the C.I.A.M., Wright's *Broadacre City* of 1934, Venturi's counter-reformatory *Complexity and Contradiction in Architecture* of 1966 and Arthur Drexler's *Ecole* revival of 1977, which closed the circle. We may be thankful, then, that such bibliographically ticklish problems have not been ours, left for contemplation by some future compiler of a bicentennial exhibition in a

similar vein, if, as we might hope, there is still such a thing as architecture and still a School of Architecture and Landscape Architecture at the University of Toronto in 2090.

Nevertheless, the task of editing the wealth of antiquarian materials available for this show has been truly monumental, and the School owes a debt of gratitude to the authors, John Rossini ('88), and Professor van Ginkel, Chairman of the Centennial Celebrations Committee, and to our colleagues in the Fisher Rare Book Library, whose support for the idea and patient hospitality in its execution have made the exhibition possible.

Anthony Eardley

Dean, School of Architecture and Landscape Architecture



From Downing's *The Architecture of Country Houses*.

An Architect's Library of 1890

Selected from the collection of the Thomas Fisher Rare Book Library, these volumes could have been chosen from the library of a Toronto architect in the year that the program in architecture was instituted at the University of Toronto. Indeed, a few are from the library of the Toronto architect William G. Storm (1826 - 1892), which was acquired by the OAA and placed in the Fisher collection. Our mythical architect was born in England where he received a classical education, read Latin and had a working knowledge of French and German. He apprenticed to an architect in London and travelled in Europe as extensively as his means allowed. Returning to England, he worked for a brief period with an architect in Bristol, the major city in the region of his family home.

A cousin of our architect was already employed as an engineer on railway construction in Canada. His letters describing the growing city of Toronto prompted our adventurous architect to emigrate in 1863. His practice in Toronto flourished and it is likely that he acquired some of the rarer books in his library when he visited Europe in connection with his more important commissions. His library was both scholarly and practical, and it is evident from his journal that the older volumes of illustrations and treatises on architecture and the contemporary handbooks and compendiums were relevant to his professional work in equal measure.

In late nineteenth-century Canada the potential sources of inspiration for the architect were varied. In Toronto, English custom was strong but the Ecole des Beaux-Arts in Paris had international currency and the new ideas and trends of Boston, New York and Chicago were influential. Thus can be seen among Toronto buildings of the period, third and fourth generation re-interpretations of Graeco-Roman antiquity and of mediaeval England, along with early cast-iron buildings and reference to the Chicago school. The extensive engineering works of the period, particularly railway bridges, must have influenced the design of the factories and warehouses which were constructed during this time of industrial and mercantile growth.

For a thoughtful and scholarly architect of 1890, a study of the original sources of forms and ideas might have elucidated subsequent analyses, interpretations and developments, and complemented the contemporary practical handbooks in the evolution of his buildings.

About the exhibition

The display of books on the second floor represents some of the major influences on the work of the Toronto architect of 1890: the Renaissance and its Graeco-Roman antecedents; Romanesque and Gothic; the Ecole des Beaux-Arts; English houses and churches; contemporary construction practice and engineering.

Books on architecture had not yet been published in English Canada. All of the older volumes in the exhibition are European, but some late nineteenth-century works are from the United States. The early books were entirely made by hand, on sheets of paper made from hemp, flax or rags on a hand-operated press with hand-set type and wood blocks or engraved plates. It is not surprising to find that some of the older books in the collection contain the bookplate of an English lord, both because of the cost of the volume and because a passing knowledge of architecture was expected of the educated. By the early nineteenth century, paper was made by machine in large sheets and rolls. By the end of the century, the steam-powered cylindrical press and paper made from wood-cellulose increased the volume and decreased the cost of publishing.

In the second half of the nineteenth century, the work of American architects began to be an influence in Toronto, both through commissions and publication. By the end of the century, the construction manuals and builder's handbooks were as likely to be American as English.

The volumes span 350 years, but it is evident from subsequent editions and translations that some of the earliest works continued to be of interest, notably the treatise of Marcus Vitruvius Pollio, *De Architectura*, which appears in the original Latin, many of the construction drawings remaining applicable. Indeed, the Vitruvian dictum of the measure of architecture remains current today, after 2000 years: *firmitas, utilitas et venustas*, which was variously rendered in English as strength, utility, grace; durability, convenience, beauty; firmness, fitness, delight. Whether through emulation, inspiration or instruction, these treatises, drawings and manuals lie behind the building of nineteenth-century Toronto.

Case 1. English Tradition

The houses and churches of nineteenth-century Toronto were clearly of English derivation, their formal influence remaining to this day. A proper church was Gothic, like the Church of the Holy Trinity — and in the twentieth century, the Cathedral Church of Saint James. By extension, schools also were in a Gothic style, since education was a charge of the church: the small Enoch Turner schoolhouse and, subsequently, colleges of the University of Toronto and a host of high schools. Banks and public buildings tended to be in the neo-classical style. Older houses were Georgian. Most were patterned on the English cottage or country house, as in Cabbagetown and Don Vale, although there were a few small terraces of town houses. The style of 1890 was often Victorian Gothic Revival, Second Empire, or an eclectic mix.

The idealized landscape was the soft romantic English park, notwithstanding the greater scale and toughness of the Canadian environment. The country estate and the gardens at Kew were familiar examples, the latter also suggesting the model for public greenhouses and winter gardens.

William Chambers. Plans, Elevations, Sections, and Perspective Views of the Gardens and Buildings at Kew in Surry. London: Printed by J. Haberkorn, 1763.

Chambers was born in Sweden, the son of a Scottish merchant. Service with the Swedish East India Company gave him the opportunity to travel to China where his interest in architecture was stimulated. Upon his return to Europe in 1749, Chambers embarked upon the study of architecture under Blondel in Paris, followed by further study in Italy.

In England Chambers designed town and country houses and was commissioned to work on the buildings and planning of Kew Gardens. Chambers's garden layout, along with his designs for the temples, mosque and Chinese pagoda, are illustrated in the work displayed here. His most famous creation, the pagoda, is seen in this perspective view.

Andrew Downing. The Architecture of Country Houses: including Designs for Cottages, Farm Houses, and Villas. New York: D. Appleton & Co., 1850.

Andrew Downing's fame is based on his work as a horticulturist, gardener, rural architect and writer. As author he is principally known through his articles in *The Horticulturist* and by his books on fruit trees and the design of country homes.

Downing believed that while the classical style was appropriate for civic buildings, the Gothic style was preferable for a rural setting. Downing also suggested the bracketed as an alternative style, being less exuberant than either the classical or Gothic and characterized by the use of brackets under projecting eaves. In his book Downing offers designs for bracketed houses, accompanied by information on materials, ventilation, interior finishing and furnishings.

James Gibbs. A Book of Architecture, Containing Designs of Buildings and Ornaments. 2nd ed. London: Printed for W. Innys & R. Manby, 1739.

In the preface to his book, Gibbs is critical of contemporary construction and design practices and writes:

"For it is not the bulk of a fabrick, the richness of the materials, the multiplicity of lines, nor the gaudiness of the finishing, that give the grace or beauty and grandeur to a building; but the proportion of the parts to one another and to the whole, whether entirely plain, or enriched with a few ornaments properly disposed."

The spirit of Gibbs's words reflects the influence of the classical training he had received under Carlo Fontana in Rome. Upon his return to London in 1709, Gibbs was appointed surveyor to the Commission for Building Fifty New Churches in London. This appointment presented Gibbs with the opportunity to exercise his Italianate training, which is evident in his design for the church of St. Martin-in-the-Fields, illustrated here. In St. Martin Gibbs is concerned with reconciling the traditional church steeple with the classical temple form. His innovative solution was widely imitated in English Protestant church architecture, especially in North America.

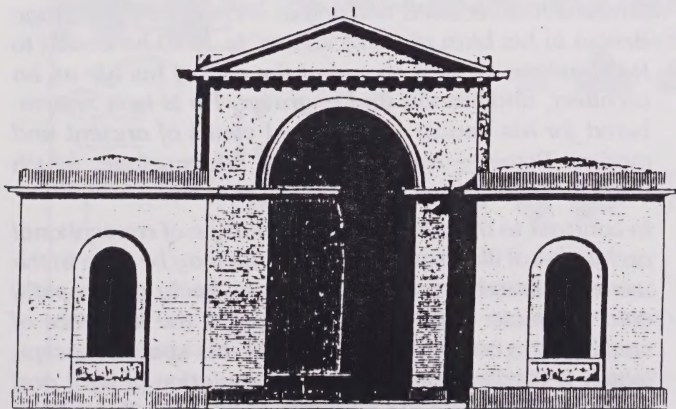
Batty Langley. Gothic Architecture, Improved by Rules and Proportions. London: Printed for John Millan, 1747.

The purpose of Langley's pocket guide on Gothic architecture, one of several guides written by him, was to simplify architectural design. In the guide he offers rules and proportions applicable to the design of columns, doors, windows, chimneys, and arcades.

John Soane. Designs in Architecture. London: Printed for I. Taylor, 1778.

Soane was born in 1753, the son of a bricklayer. In 1788 he was appointed surveyor to the Bank of England and three years later Clerk of the Works at Whitehall. Soane succeeded to the Professorship of Architecture at the Royal Academy in 1806, and in 1835 was recognized with the award of the gold medal of the Royal Institute of British Architects. Soane was noted for his individual style in architecture, characterized by the use of shallow domes and clerestory lighting, segmental arches, and skilful site planning.

During his distinguished career Soane published several works, one of the earliest being his *Designs in Architecture*. In contrast to the great scale of his later commissions for public buildings, this book illustrates more modest structures, such as garden pavillions, temples, baths, in section and elevation.



A design for a bath and garden seat in *Designs in Architecture*, by John Soane.

Case 2. The Renaissance

The early buildings of Toronto were neo-classical, as they were throughout Europe and America. Even after the Gothic revival of the nineteenth century, the style persisted in banks and public buildings. A scholarly architect might have referred for inspiration to these volumes of the glories of Renaissance Rome. Few of the earliest Toronto buildings survive, but the Campbell House and Osgoode Hall are familiar examples of the neo-classical in the first decades of nineteenth-century Toronto.

Giambattista Nolli. Nuova Pianta di Roma. [Roma: s.n., 1748]

Although trained as an architect, Nolli is best known for the great plan of Rome of 1748. Production of the plan involved a thorough and precise survey of the ancient and modern monuments of Rome. This survey was completed by 1742, followed by the printing of the plan six years later. Shown here is one of the best known plates in Nolli's series, illustrating many of the principal spaces and building site plans of eighteenth-century Rome, among them the Piazza Navona, Monte Citorio and the Campidoglio.

Giovanni Battista Piranesi. Opere Varie di Architettura, Prospettive, Grotteschi, antichità sul gusto degli Antichi Romani. Roma: Si vendono presso l'autore, 1750.

Piranesi had received training in architecture and stage design in his birth place of Venice. In 1740 he moved to Rome where he was to spend the rest of his life as an architect, antiquarian and engraver. He is best remembered for his Veduti — engraved views of ancient and modern Rome — and his Carceri d'Invenzione, which were fantastic views of imaginary prisons.

In contrast to the disciplined linear style of conventional architectural illustration, Piranesi, as may be seen in the work exhibited here, sketches more freely and rapidly onto the plate. This technique reflects the influence of stage design on the artist. Moreover, his spatial concept, which is created through the manipulation of light and dark areas, reflects the influence of baroque illusionism.

Carlo Maderno. Prospetto della Basilica Vaticana. A La Haye: Chez R. Alberts, 1724.

By 1605 what was left of the old basilica of St. Peter's had been demolished. In the same year Pope Paul V commissioned Carlo Maderno to lengthen the nave and design the elevation of the new church. The facade consists of eight immense columns and four pilasters supporting an entablature and attic storey. In scale the facade is monumental, its great size obscuring the view of the dome from the piazza.

Maderno never lived to see the completion of his work on St. Peter's. On his death in 1629 Bernini assumed the role of chief architect of the basilica. The engraving displayed was executed by the noted seventeenth-century Roman engraver G.G. de Rossl.

Giuseppe Vasi. DELLE MAGNIFICENZE DI ROMA ANTICA E MODERNA. In Roma: Nella Stamperia del Chracas presso S. Marco al Corso, 1749-1769. 10 vols.

On the title page Vasi is presented as "... pittore, incisore, architetto e pastore arcade". The multi-talented Vasi proceeds to illustrate the notable piazzas, palaces, walls and gates of Rome. Shown here is the view of the Piazza di Spagna. On the left is seen the foot of the steps of the famous Scalinata; in the centre the Fontana della Barcaccia by Pietro Bernini; and in the background the Papal Collegio di Propaganda Fide.

Case 3. Antiquity

The antecedents of the Renaissance forms were in the ruins of ancient Greece and Rome. The first intimations of a Renaissance in Italy were in literature and in discovery, such as the principles of perspective. The re-discovery in the early fifteenth century of the treatise of Vitruvius, *De Architectura*, written in the first century A.D., had a profound influence on the revival of Roman forms. The ten books of this treatise constituted a comprehensive review of the art, science and practice of building of his time, encompassing aesthetics, the classical orders, building requirements, sanitation, settlement and siting, engineering and construction methods.

Inevitably, antiquity was romanticized, particularly in the eighteenth century, and the ruins themselves became objects of romantic art, in this case through the eyes of an Englishman. They also inspired the construction of mock ruins and "follies".

Girolamo Franzini. *Les Merveilles de la Ville de Rome. Rome: De l'imprimerie de feu Mascardi, 1668.*

A traveller's pocket guide describing the major "tourist attractions" of seventeenth-century Rome. Indexed and amply illustrated, the guide includes such attractions as the walls, obelisks, ruins and churches of Rome. Shown here is the Pantheon, the circular Roman temple built by Agrippa in 27 B.C. and consecrated as a Christian church in 609 A.D. By 1668, the date of publication of Franzini's guide, Bernini had added two turrets to the elevation of the Pantheon. The "ass-ears of Bernini", as the turrets became known, are not shown in Franzini's illustration.

Bernardo Gamucci. *Le Antichità della Città di Roma. 2a ed. In Vinegia: Appresso Giovanni Varisco, & compagni, 1588.*

In the preface to Gamucci's guide book Giovanni Varisco writes

"... M. Bernardo Gamucci da San Gimignano, architetto e antiquario de nostri tempi dignissimo, raccolga in breve compendio l'antichità di Roma già tante volte da altri scrittori, antichi e moderni descritta." In his "breve compendio" Gamucci includes selected views of Trajan's column and the Pyramid of C. Cestius. Shown here is the Foro Romano keyed to note such monuments as the Arch of Septimius Severus and the Temple of Saturn.

Luigi Contarini. *L'Antiquità de Roma. Venetia: Francesco Ziletti, 1575.*

Contarini's guidebook of Rome is unlike Franzini's and Gamucci's guides by virtue of its specialization and focus on religious attractions. Included in the work is a "tavola delle cose più notabili" and descriptions of statues, relics, sepulchres, churches and religious celebrities.

Vitruvius Pollio. De Architectura Libri Decem. Lugduni: [s.n.], 1523.

The rise of Humanism in the fifteenth century was accompanied by a strong interest in the classical texts of the Greeks and Romans and in their dissemination through the new invention of the printing press. The printing of Vitruvius's text was very much a part of this movement.

Vitruvius's ten books of architecture covered several aspects of architecture — town planning, civil and religious architecture, construction and materials. Shown here is a woodcut image of a Corinthian column.

Giovanni Battista Piranesi. Tempio antico volgarmente detto della Salute su la Via d'Albano. [Roma? s.n., ca. 1756?]

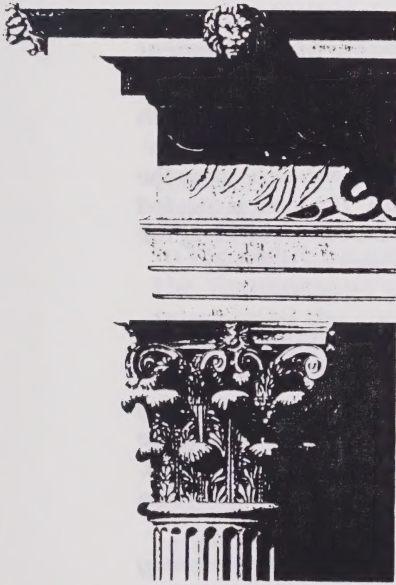
The eighteenth-century nostalgic fascination with the ancient past are captured in Piranesi's etchings of ruins. The dramatic manipulation of light and shade and the great scale of the ruins, contrasting with the smaller bizarre human forms, created a vision of Rome that was poetic and picturesque.

Ruins of Athens, with Remains of Other Valuable antiquities in Greece. London: Printed for Robert Sayer, 1759.

The illustration of classical Greek architecture in ruin and reconstruction is the theme of this work. Among the monuments illustrated are the Temple of Minerva, Temple of Theseus, and Lanthorn of Demosthenes. Accompanying the plates are descriptions of the monuments, including their history, construction, dimensions and facade treatment. Shown here is the reconstruction of the Temple of Minerva in front elevation, floor plan and partial section. The elevation is expressed with fluted columns of the Doric order without bases but with a decorated entablature.

Case 4. The Orders of Architecture

Knowledge of the proportion and detail of the classical orders was essential to the study and practice of architecture. The builder's handbook of Langley included precise instructions for fabrication in 1757. The architect might be inspired by the classic simplicity of Palladio, the imaginative applications of Serlio, or the later, more florid, French renditions. A later paper-back edition of Vignola's precise instructions was a standard textbook in Canadian schools until the mid-twentieth century.



Corinthian details from
Baltard's *Paris et ses
Monuments*.

Louis Pierre Baltard. *Paris et ses Monuments*. A Paris: De l'impr. de Crapelet, 1803.

Baltard was an architect, teacher, and engraver. As an architect he designed the Palais de Justice and the chapels of the Prisons of Saint Lazare and Saint Pelagie in Paris. As a teacher and engraver he taught at the Ecole des Beaux-Arts and published *Paris et ses Monuments*. The work, dedicated to Napoleon I, is a study of the major public edifices in Paris. The text includes several perspective views of the Louvre, studies of details used in its construction and is accompanied by a commentary. Shown here is one such study of Corinthian details.

Batty and Thomas Langley. *The Builder's Jewel, or, The Youth's Instructor, and Workman's Remembrancer*. London: Printed for R. Ware, 1757.

Batty Langley's fame rests not on his work as an original architect but on his many publications on architecture. The objective of his pattern books and pocket guides was to simplify the understanding of construction and of the architectural orders and to provide, as Langley notes in *The Builder's Jewel* "short and easy rules for drawing and working". In addition to being an architectural writer Langley was a freemason, an affiliation which is expressed in the masonic frontispiece to the book.

Andrea Palladio. The Four Books of Architecture; literally translated from the original Italian by Isaac Ware, Esq. London: Printed for R. Ware, [1737]

Palladio's Four Books cover the architectural orders, villas, houses, bridges, churches and ancient temples. The text is illustrated with simple line drawings and is practical in spirit, with less concern with theory. The Four Books were widely reproduced and exerted a major influence upon architecture in the following centuries. The text is open at a partial elevation of Palladio's design for the house of Valerio Chiericato in Vicenza.

Sebastiano Serlio. Libro Primo [-Quinto] d'Architettura. In Venetia: Appresso Gio. Battista et Marchio Sessa fratelli, [1559-1562]

Serlio's treatise was widely reproduced in the sixteenth and seventeenth centuries. His presentation and interpretation of the classical architectural orders became the authoritative standard for architects. The work is divided into five books. Shown here is Serlio's interpretation of the Doric order on the elevation of a Venetian palazzo.

Giacomo Barozzio Vignola. Regola delli Cinque Ordini d'Architettura. Siena: Pietro Marchetti, [1635]

Vignola's fame as an architect grew during the period of his service to the Farnese family in the latter half of the sixteenth century. His buildings include the Villa Giulia, the Farnese palace in Caprarola, and the churches of San Andrea and Il Gesù in Rome.

In the Regola Vignola presents a system for proportioning the five orders. This system involved a constant relationship between pedestal, column and entablature and between the column's radius and the dimensions of an order's parts. The Regola was widely reproduced and eventually superseded Serlio's Five Books as the standard authority among architects.

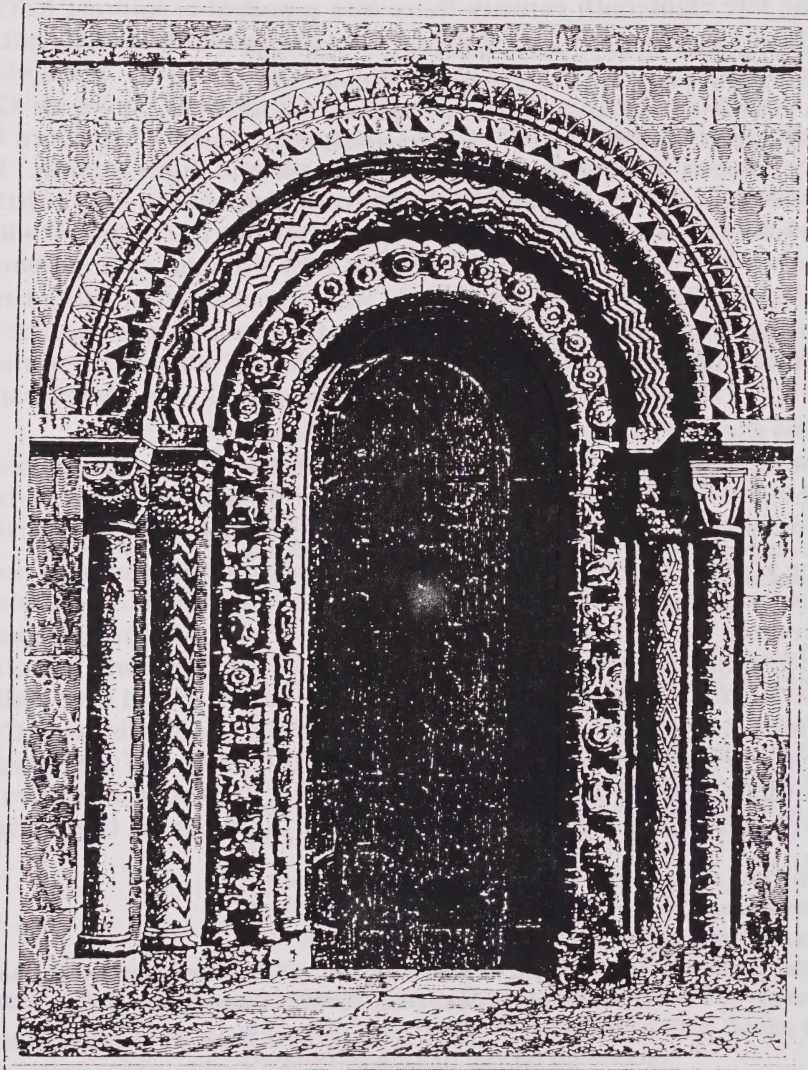
Case 5. Mediaevalism

In the late eighteenth century there was a revival of interest in Gothic form, which may have been furthered by the romantic mediaevalism of writers such as Johann von Goethe and Sir Walter Scott. The style first was applied to country houses and many analytical books on Gothic architecture appeared in England, the most influential authors being Batty Langley, John Britton, Augustus Pugin and John Ruskin. Pugin argued vociferously that Gothic was the only proper form for a "Christian architecture"; and Ruskin moralized on its virtues as compared with the corruption of Rome. It is also possible that growing nationalism and empire-building favoured a style that was perceived to be more English than the Italianate Renaissance. Gothic and Romanesque became fashionable in Europe and America, although the classicists remained steadfast. Despite the work of Viollet-le-Duc, the Gothic revival had less impact in France.

In the battle of the styles of the nineteenth century, the mediaevalists won ecclesiastic and academic buildings and the classicists retained banks and commerce. Government and domestic buildings were free territory. In the vogue for mediaevalism, a few churches and houses were built in the Romanesque style, but it was Henry Hobson Richardson who re-interpreted the style with enormous impact. One of the most important American architects of the nineteenth century, Richardson's adaptation of the Romanesque certainly influenced the design of Old City Hall, the Provincial Legislature and University College. But the English neo-Gothic is clearly behind most of Toronto's churches, the colleges of the University of Toronto and in the windows, details and fireplaces of several old houses. Its legacy remained in the school buildings of the twentieth century.

David Arnot. Gothic Architecture Applied to Modern Residences. New York: D. Appleton & Co., 1850.

Arnot's work is a pattern book for both clients and architects interested in the Gothic style. Included are details of interior and exterior ornament, and perspective views of parlours, libraries and staircases.



The south doorway of Ilfley Church in Oxfordshire from *The Architectural Antiquities of Great Britain*, by John Britton.

"The perspective drawings are such as to give a true idea to the owner selecting specimens for the adornment of his house and are accompanied with all the necessary details to a working scale, to enable the mechanic to give an accurate estimate of cost based on actual measurement."

John Britton. The Architectural Antiquities of Great Britain, Represented and Illustrated in a Series of Views, Elevations, Plans, Sections, and Details, of Various Ancient English Edifices. Vol. V. London: Printed for Longman, Rees, Orme, Brown, and Green, 1826.

Britton's aim was to present the history and styles of ecclesiastical architecture in Britain. The work covers Anglo-Roman, Anglo-Saxon, and Anglo-Norman church architecture, and is profusely illustrated with section, elevation and detail drawings. Along with his other work, *The Cathedral Antiquities* (1836), Britton was instrumental in encouraging the appreciation of mediaeval art and architecture and in inspiring the Gothic Revival in Britain and North America. Shown here is the elevation of the south doorway of Iffley Church in Oxfordshire.

Bristol, England. St. Mary Redcliffe Church. Restoration of the Church of St. Mary, Redcliffe, Bristol; An Appeal by the Vicar, Churchwardens, and Vestry. With an Abstract of Reports by Messrs Britton and Hosking; and Engraved Plan and Views of the Church. Bristol: Printed for the Vestry, 1842.

The publication of this work was instigated by parishioners, concerned over the church's deteriorating condition. Their concern prompted them to retain John Britton "... to advise respecting the decayed state of their church and the best mode of restoring it to its pristine integrity and beauty". The report was in two sections: the first on the tower and spire; the second on the church with the Lady Chapel and accessories. Included in the report was a breakdown of costs for repair and illustrations of the church. Shown here is the view of the west front.

James Kellaway Colling. Examples of English Mediaeval Foliage and Coloured Decoration Taken from Buildings of the Twelfth to the Fifteenth Century. London: Published by the author, and by B.T. Batsford, 1874.

Colling trained as an engineer and worked as an architect, but is best known for his considerable drafting skills and his books on foliated ornament. As an architect/draughtsman Colling published drawings in the Illustrated London News and was co-founder of the Architectural Association in London. As a writer he is known for his books *The Grammar of Ornament* (1856), *Art Foliage* (1865) and *the Examples*. In these works, Colling's inspiration to study foliated ornament originates, not in the Christian revivalism of the previous decades, but from a concern to classify and systematize visual forms on the basis of a more rigorous scientific approach. Shown here is an example of Norman patterning.

Francis Dollman. Examples of Antient Pulpits Existing in England. London: George Bell, 1849.

At the beginning of his book Dollman writes: "While, however, the rest of Ecclesiological research has been to illustrate almost all else connected with Church Architecture, the subject now to be considered has hitherto continued without elucidation." In his book the author illustrates the ancient pulpits remaining in England. A table is included which summarizes information on name, town and county location, construction material and construction date. In addition, Dollman's book is profusely illustrated with line drawings in section and elevation. Shown here is the pulpit in Holy Trinity Church, one of two colour illustrations in the book.

Charles D. Gambrill and Henry H. Richardson. Trinity Church, Boston, Mass. (Monographs of American Architecture issued in connection with The American Architect and Building News, V) Boston: Ticknor & Co., 1888.

Henry Richardson was one of the foremost American architects of the nineteenth century. Born in Louisiana, Richardson was educated at Harvard College and the

Ecole des Beaux-Arts. He returned to the United States in 1865 and two years later entered into partnership with Charles Gambrill.

Trinity Church Boston marked a turning point in Richardson's career. The church is styled in the French romanesque, characterized by a cruciform plan and the romanesque details of arches, piers, and capitols. This style had never been used before in the United States. The unique quality of Richardson's church, however, was not to be found simply in its romanesque origins, but in the nature of the space it created — a soaring open space at the crossing of the cruciform which had no parallel in romanesque churches. The space thus created suggested an auditorium reminiscent of the meeting houses of colonial times. This identification with America's past not only reflected Richardson's historical sensitivity, but also generated an architecture in a uniquely American spirit. The monograph on Trinity Church includes interior and exterior views of the Church, and detailed views as well as a photograph of the architect.

Augustus Welby Pugin. An Apology for the Revival of Christian Architecture in England. London: John Weale, 1843.

Born in 1812, the son of the architect Augustus Charles Pugin, Augustus Welby followed in his father's footsteps. The most important commission in his career was his work on the New Palace of Westminster.

In this work Pugin laments what he perceives as the deterioration of contemporary architecture and the need for a revived Christian architecture "... as the only correct expression of the faith, wants and climate of our country". In polemical spirit he adds that "the restorers of Christian architecture are more consistent followers of classical principles than all these boasted Greeks". Underlying Pugin's convictions were his recent conversion to Roman Catholicism, his antiquarian interests, and a deep understanding of mediaeval art.

For Pugin the revival of Christian architecture involved more than a revival of ecclesiastical architecture: it also had consequences for civic and domestic buildings. Illustrated here is a street elevation.

William Warrington. The History of Stained Glass, from the Earliest Period of the Art to the Present Time. London: Published by the author, 1848.

The inspiration for Warrington's work stemmed from his belief in the existence of a revived interest in the mediaeval period and its art. Warrington writes that

"... symptoms of a taste for olden times are beginning to shew themselves in many particulars; a desire to revive what has long been forgotten; a tendency to admire in our ancestors what for some years past we have been in the habit of ridiculing; a taste for old-fashioned furniture, the old style of architecture ... indicate the beginning of a new movement, not a backward movement into the follies and absurdities of ancient times, but a going back to pick up the good which our predecessors in their zeal for reformation cast off inconsiderately along with the evil."

In this work, the history of stained glass is amply illustrated with colour plates and is accompanied by a text on the artists.

Case 6. The French School

The Ecole des Beaux-Arts in Paris was the oldest institution offering an education in architecture and consequently had considerable authority. But, unlike current instruction, students worked/studied in the atelier of a master and the school applied its standards by accepting or rejecting the submitted projects. By the late nineteenth century, several American architects had spent some time in the Ecole and its influence came to Canada second-hand in commissioned projects and American publications. Later, Canadian architects went to the Ecole, but books such as these and travel in France undoubtedly had some impact on the architect of 1890 and later. The formally symmetrical elevation and plan persisted as a given for any important building, emulated by the first teachers in the University of Toronto.

In the 1870s the Second Empire style was fashionable in Toronto, as elsewhere, and can be seen in the mansard roof and dormers of houses on Wellesley and notably in the mansion at 582 Sherbourne. The impressive mien of the Louvre must have inspired many Toronto bank buildings. The intricate "Roman" details could have been the model for theatres and later cinemas and the villa could have been in Rosedale.

Louis Pierre Baltard. Paris et ses Monumens. A Paris: De l'impr. de Crapelet, 1803.

Baltard's work includes both detail studies of the architectural orders and perspective drawings of public buildings, in particular, the Louvre. Selected here is one perspective view of the palace.

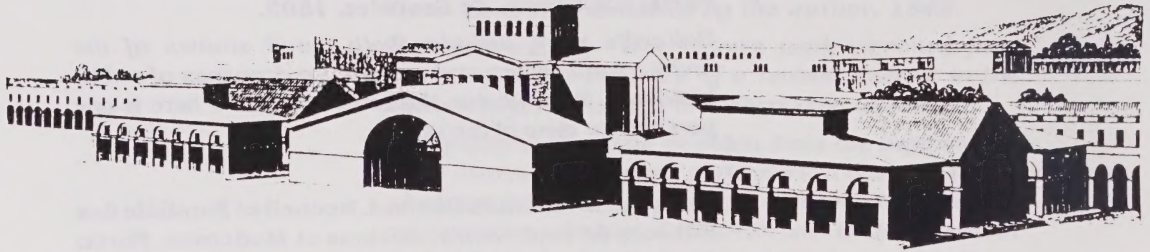
Jean Nicholas Louis Durand. Recueil et Parallèle des Édifices de tout Genre, Anciens et Modernes. Paris: Ecole Polytechnique, chez l'auteur, an IX [1800]

Born in Paris in 1760, during his youth Durand worked for the architect Boule. He subsequently studied at the Académie d'Architecture, and in 1779 was placed second in the Prix de Rome.

The greater part of Durand's professional life was spent as a teacher at the Ecole Polytechnique. In his teaching he accepted the neo-classical vocabulary, but rejected its symbolic associations, and instead stressed the importance of addressing issues of utility in a building. Durand's economic attitude was manifested in his teaching approach which encouraged the drawing of plans on grid-
ded paper. This concern is also reflected in the Recueil — a survey of world architecture, in which the illustration of buildings is executed through simple line drawings.

Johann Carl Krafft. Plans, Coupes, Élévations des Plus Belles Maisons et des Hôtels Construits à Paris et dans les Environs. Paris: The editors, 1801-1803.

As an author of architectural monographs Krafft was frequently published. In addition to his writings on the city house, Krafft wrote on ancient and modern architecture, gardens and garden artists, and country houses. Krafft's Plans is profusely illustrated with plan, section and elevation drawings of many examples of the city house. Of note is Krafft's economy of line in depicting his examples.



The Maison de Commerce, from *L'Architecture Considérée sous le Rapport de l'Art*.

Claude Nicolas Ledoux. *L'Architecture Considérée sous le Rapport de l'Art, des Moeurs et de la Législation*. Vol. 2. Paris: Lenoir, 1847.

Ledoux was prolific both as a neoclassical architect and as a theorist. His architectural works include the Hôtel de Montmorency (1769), the Hôtel de Thélusson (1776-1771), and the saltworks of Chaux at Arc-et-Senans (1774-1779). As theorist his monumental *L'Architecture* combines architecture with a strong sociological interest.

Ledoux's architecture is set in the context of a social utopia, the town of Chaux. In this town the citizens are employed in saltworks and agriculture and live in harmonious co-existence. Houses, workshops, and public buildings are judiciously planned so as to minimize social deviance and to uphold the "social contract" between citizens. Shown here is one building in the complex, the *Maison de Commerce*.

Case 7. Construction

Until the advent of structural cast iron, building methods had changed little over several centuries and the handbook of 1724 might have remained a useful reference work. So too, might have been the roof framing details illustrated by Belidor in 1729 or those for the construction of a vault at the Vatican in the Fontana volume of 1694 or indeed the truss drawn by Vitruvius in the first century A.D.

By 1890, builder's handbooks abounded, particularly those which detailed the design and construction of houses. Advances in building technology in the United States prompted the new generation of handbooks, which were published in larger quantity than previously, thanks to the mechanized printing press.

The Crystal Palace, with its prefabricated unit construction and glazing was one of the wonders of the world. Curiously, while it heralded a new age in construction and in visual perception, its contents at the Great Exhibition reinforced Victorian aesthetic and sentimentality.

Bernard Belidor. *La Science des Ingenieurs dans la Conduite des Travaux de Fortification et d'Architecture Civile*. A Paris: Chez Claude Jombert, 1729.

Belidor was a Commissioner of Artillery, a Professor of Mathematics and a member of the Royal Academy of Sciences. He gained fame for his Architecture Hydraulique, an influential treatise on practical hydraulics. La Science is a more general work on civil and military architecture. The work is amply illustrated with drawings showing construction methods and machinery.

M. Digby Wyatt. *Views of the Crystal Palace and Park, Sydenham*. London: Day and Son, 1854.

The construction of the Crystal Palace at Sydenham in 1854 inspired Wyatt to write of the "... wrapt sentiment of astonishment which overpowers the spectator as he stands beneath the enormous vault of the great transept". Joseph Paxton, the architect of the Crystal Palace, had astounded the world with a building of glass and iron assembled from mass-produced prefabricated components.

The building, designed to house the exhibition of world industry, was the largest building ever built. Presentation of the exhibits at the Crystal Palace is the theme of Wyatt's book which is amply illustrated with colour views and accompanying commentary. Shown here is the view of the north transept.

Carlo Fontana. *Templum Vaticanum et ipsius origio. In Roma: Nella Stamperia di Gio. Francesco Buagni, 1694.*

Carlo Fontana was born in 1638 near Como in northern Italy, a region which produced many great architects, among them Carlo Maderno and Francesco Borromini. In 1655 Fontana moved to Rome where he became assistant to Cortona, Rainaldi, and Bernini. With Bernini, Fontana collaborated on several projects for St. Peter's, among them St. Peter's square and the remodelling of the Scala Regia.

Fontana's text describes the history of the buildings on the Vatican site and is amply illustrated with full-page and fold-out plates.

The original Roman structures which occupied the site are described, as are the later Constantinian basilica and contemporary renaissance and baroque buildings. The buildings are illustrated in plan, section and elevation and are accompanied by drawings showing construction processes and details of construction machinery. Shown here is a drawing of the "incavallatura" — framing for the construction of the Vatican vaults.

William Halpenny. *Practical Architecture, or, A Sure Guide to the True Working According to the Rules of that Science: Representing the Five Orders. [London]: Printed for and sold by Tho. Bowles, [1724]*

As an architect Halpenny was rather obscure, and consequently little is known of his architectural activity. Like his contemporary Batty Langley, Halpenny's fame is based upon his activity in the field of architectural publishing. *Practical Architecture*, Halpenny's first publication, was intended to be "... a sure guide to the true working according to the rules of that science: representing the five orders with their several doors and windows".

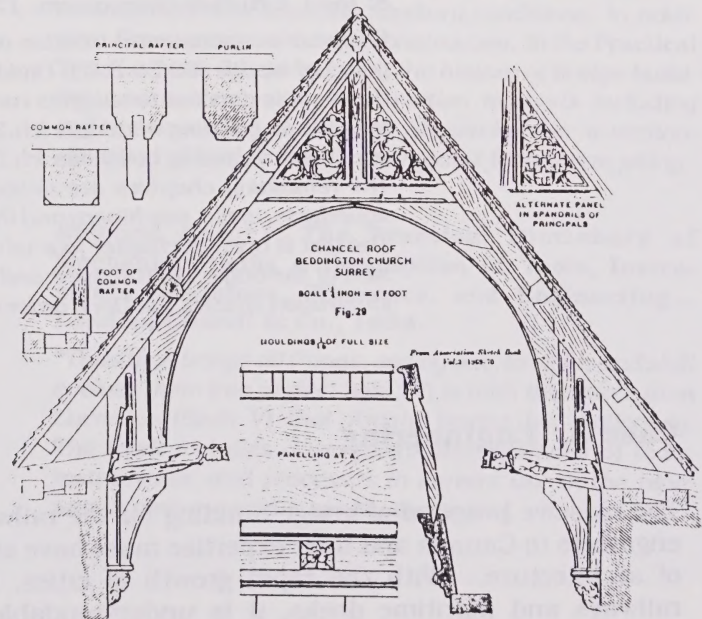
Included in the text are proportional tables to allow the builder and architect to proportion architectural elements correctly. One such table, used in the proper proportioning of a window, is illustrated here.

Frank Eugene Kidder. The Architect's and Builder's Pocket-Book of Mensuration, Geometry, Geometrical Problems ... New York: John Wiley & Sons, 1885.

Kidder was born in Bangor, Maine in 1859 and was trained in both architecture and engineering at Cornell University and the Massachusetts Institute of Technology. Kidder began practice in Boston before moving to Denver in 1888.

As an architect Kidder is less known for his architectural activity than as the author of a pocket guide, first published in 1884. The guide is a comprehensive reference manual on construction practice and materials, and includes tables of mensuration and examples of buildings. Kidder's guide was extremely popular, going through eighteen editions in subsequent years. This edition was owned by William Storm, first president of the Ontario Association of Architects and is signed by him.

Diagrams for the chancel roof of the Beddington Church in Surrey, from *The Architect's and Builder's Pocket-Book*, by Frank Eugene Kidder.



John Claudius Loudon. Encyclopaedia of Cottage, Farm, and Villa Architecture and Furniture; Containing Numerous Designs for Dwellings, from the Cottage to the Villa... London: Longman, Rees, Orme, Brown, Green & Longman, 1833.

Loudon was born in 1783, the son of a Scottish farmer. In his youth he displayed a fondness for gardening and at the age of twenty moved to London to work as a gardener.

Although Loudon was a designer of gardens and parks he is especially remembered as a prolific author of books, encyclopaedias and magazines on agriculture, architecture, horticulture and gardening. In his publications Loudon advocated the discipline of classicism and the return to formality in the design of gardens — notions influenced by his travels in Europe. His Encyclopaedia of designs of cottages, villas, farm houses, country inns and schools clearly reflect an Italian influence.

Vitruvius Pollio. De Architectura Libri Decem. Venetiis: Apud Franciscum Franciscum Senensem, & Ioan. Crugher Germanum, 1567.

Vitruvius's monumental treatise occupied the last forty years of his life (60-20 B.C.). Divided into ten chapters, the work is devoted to subjects ranging from town planning (ch. 1), building materials (ch. 2), temple construction (ch. 3 and 4), public buildings (ch. 5), and housing (ch. 6). The remaining chapters are devoted to the building of aqueducts, wells, machinery and the study of mechanics. The text is open at chapter four which includes a discussion of the origins of the three architectural orders. The illustration studies the Doric order on a temple elevation.

Case 8. Engineering

The massive program of bridge building for the railways brought many engineers to Canada and their expertise must have affected the practice of architecture. With the rapid growth of cities, besides highways, railways and maritime docks, it is understandable that engineering became a powerful profession. The engineering establishment affected architecture not only in practice but in education, as it did in the United

States. The first two programs in architecture in Canada, at McGill and Toronto, were established in schools of engineering (or "practical science", as it was called). Not only structure, but the mechanical equipment handbooks, particularly from New York, became important to the practising architect. Some old factories and warehouses remain on Front and King Streets which, in their vertical emphasis on structure, were precursors of the twentieth century. The great arched upper storeys of the old department store at 133-5 King Street East must have appeared dramatic when it was built in 1887, heralding a new age of steel beams and expansive glazing.

Edward Cresy. A Practical Treatise on Bridge-Building, and on the Equilibrium of Vaults and Arches... London: John Williams, 1839.

Edward Cresy was both architect and engineer. As an architect Cresy undertook few public commissions, in favour of private commissions of which little is known. As an engineer, Cresy specialized in issues of sanitation and was a member of the Board of Health and of public commissions investigating sanitary conditions. In addition, Cresy wrote on bridge construction. In the Practical Treatise he is concerned with the history of bridge building and contemporary construction methods including coffer dams and pile-driving. Shown here is a section-elevation of bridge vault framing and foundation piling.

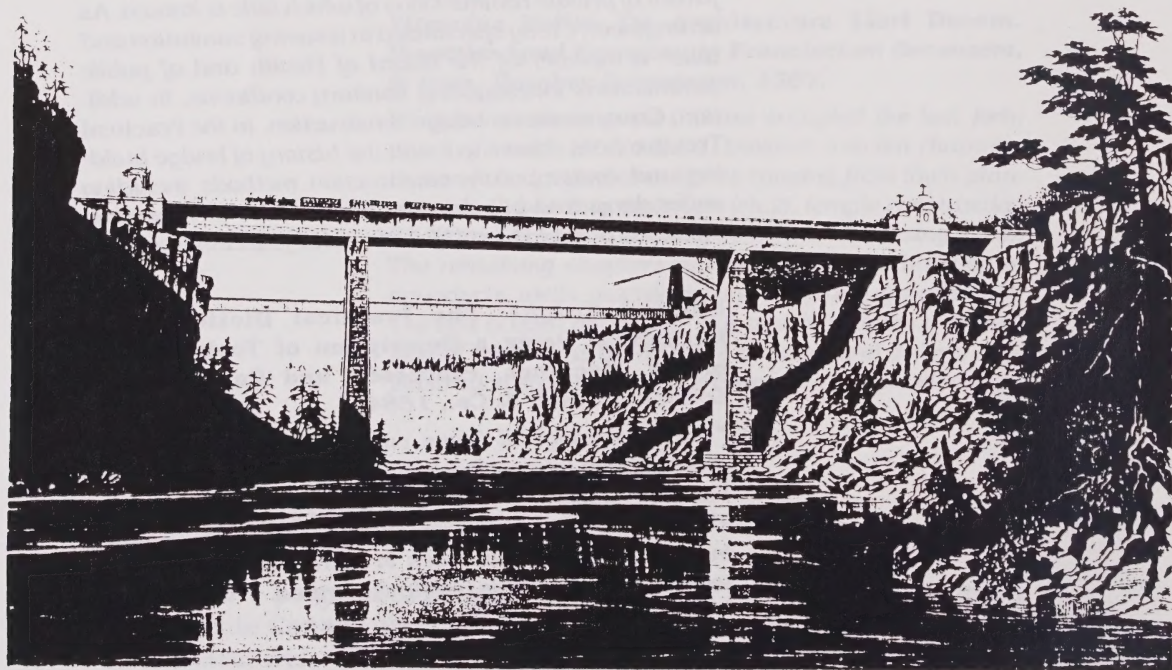
Edward Knight. The Practical Dictionary of Mechanics: Being a Description of Tools, Instruments, Machines, Processes, and Engineering... London: Cassell & Co., 1884.

"Thus time brings all things, one by one, to sight, and skill evolves them into perfect light." It is with this quote from Lucretius (Book V) that Knight begins his dictionary. The work includes descriptions and histories of tools, instruments, and processes in current use in the nineteenth century, and is amply illustrated.

James Hodges. Construction of the Great Victoria Bridge in Canada. London: John Weale, 1860.

The Victoria Bridge was designed by the engineer James Hodges to span the St. Lawrence River thus allowing the Grand Trunk Railway to cross the river. The work, dedicated to His Royal Highness Albert, Prince of Wales, who inaugurated the opening, is intended "... to explain and illustrate some of the difficulties and labours encountered by Her Majesty's subjects in the accomplishment of this important work". The text consists of plates on engineering studies, construction methods and machinery.

The work also includes an addendum on a proposed tubular bridge for crossing the Niagara gorge, and is displayed here.



Proposal for a tubular bridge to cross the Niagara gorge, from Hodges's *Construction of the Great Victoria Bridge in Canada*.

George T. Powell. Foundations and Foundation Walls, for All Classes of Buildings... New York: William T. Comstock, 1889.

Construction methods and materials used in foundation wall construction are the subjects of Powell's work. The text includes discussion of pile driving, pier and wall construction and the nature of materials to be used, including mortar, lime, cement, brick and stucco. At the time of printing Canada did not have a strong tradition of architectural and engineering publication. Consequently, the source of supply of Powell's text, as with other works of a technical nature, was either the United States or England.

The Reading Rooms

The two cases in the reading rooms on the first floor amplify the nature of the architect's library as presented on the second floor, with volumes on the theoretical and formal as well as the practical aspects of architecture in 1890.

East Reading Room

Case 1

C. Bruce Allen. Rudimentary Treatise on Cottage building, or, Hints for Improving the Dwellings of the Labouring Classes. London: John Weale, 1849-1850.

T. Baker. Rudimentary Treatise on Land and Engineering Surveying with All the Modern Improvements. New ed. London: John Weale, 1854.

Lieut. Gen. Sir John Burgoyne. Rudimentary Treatise on the Blasting and Quarrying of Stone for Buildings and other Purposes. 3rd ed. London: John Weale, 1856.

George R. Burnell. Rudimentary Treatise on Limes, Cements, Mortars, Concretes, Mastics, Plastering. London: John Weale, 1850.

G. Drysdale Dempsey. Rudimentary Treatise on the Drainage and Sewage of Towns and Buildings. London: John Weale, 1849.

G. Drysdale Dempsey. Tubular and Other Iron Girder Bridges. London: John Weale, 1850.

Edward Dobson. Rudimentary Treatise on Foundations and Concrete Works. London: John Weale, 1849.

John Swindell. Rudimentary Treatise on Well-Digging, Boring, and Pump-Work. 2nd ed. London: John Weale, 1851.

Charles Tomlinson. A Rudimentary Treatise on Warming and Ventilation. London: John Weale, 1850.

In contrast to the great physical size of Hodges' s monograph on the Victoria Bridge, the London publisher Weale also produced a series of small guide books — "Rudimentary Treatises" — on a variety of subjects of interest to architects, engineers, and builders.

Jacques François Blondel. Cours d'Architecture. A Paris: Chez l'auteur, et se vend a Amsterdam: Chez Pierre Mortier, 1698.

Blondel was an architect, theorist, and teacher. As a teacher at the Royal Academy of Architecture he was highly respected and attracted students from across Europe. His Cours is divided into three parts: the first on decoration; the second on planning; and the third on construction.

Simon De Graff. The Modern Geometrical Stair-Builder's Guide. New York: Published for the author, 1845.

In his book De Graff writes on "... the science of geometrical hand-rails and stairs". In contrast to the traditional architectural drawing of stairs in plan and section, De Graff's drawings are greatly abstracted and geometrical in nature.

William Pain. The Builder's Companion, and Workman's General Assistant. 3rd ed. London: Printed for Robert Sayer, 1769.

Little is known of William Pain's career as an architect. As a writer, however, Pain produced several architectural pattern books. His Builder's Companion is a practical guide to the design and construction of, for example, foundations, chimneys, and masonry arches.

Case 2

Charles François Roland le Virloys. Dictionnaire d'Architecture. A Paris: Chez les Libraires Associés, 1770-1771. 3 vols.

Roland le Virloys's dictionary covers civil, military, and naval architecture and is accompanied by sections on history and construction.

Pierre Patte. Monumens Érigés en France à la Gloire de Louis XV. A Paris: Chez l'auteur, 1765.

Patte was born in Paris in 1723. Although trained as an architect at the Academy of Architecture, he is best remembered as an architectural writer and compiler. Patte completed Blondel's Cours d'Architecture after the author's death and compiled the Monumens. Included in the Monumens is a series of designs for a royal square in Paris. This technique of compilation reflected a critical attitude to architectural design by allowing readers to study more than one solution.

Jean Perronet. *Planche d'Architecture*. [Paris? s.n.], 1782.

Perronet began his professional life as a soldier. In 1735 he enrolled at the Corps des Ponts et Chaussées, and in 1747 was appointed director of the Ecole des Ponts et Chaussées in Paris. Perronet became a leading bridge engineer of the eighteenth century. He originated the notion that the several structural members of a construction need not be viewed as separate structural entities, but rather as related elements in a unified system.

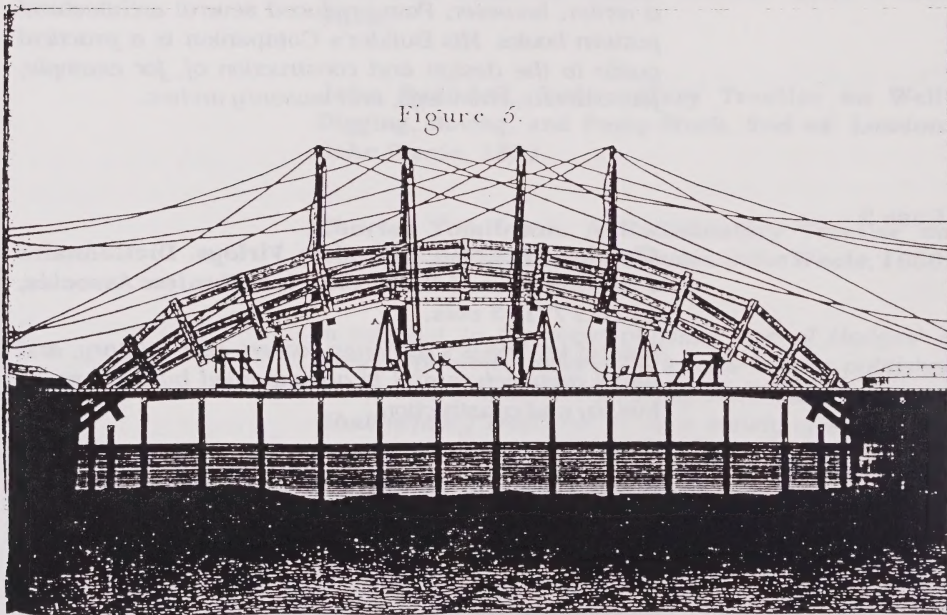


Illustration of a service bridge in Perronet's *Planche d'Architecture*.

West Reading Room

Case 1

Leon Battista Alberti. Della Architettura Libri X. Della Pittura, Libri III, e Della Statua Libro I. Tradotti in lingua italiana da Cosimo Bartoli. Nova ed. In Londra: Presso Tommaso Edlin, 1726.

Alberti was one of the first Renaissance architects and architectural writers. As an architect his fame rests on several projects, among them S. Andrea in Mantua, and the palace of the Cancellaria in Rome. *Della Architettura* is a bilingual text in Italian and English, and includes his collected works and related writings on painting and sculpture.

Giovanni Battista Falda. Two Views of the Scala Regia. [Rome: G.G. de Rossi, late 17th century]

Falda was a seventeenth-century engraver of Rome's fountains, gardens and buildings. Among his many engravings are these two views of the Scala Regia, Bernini's famous ceremonial staircase in the Vatican. One view is that of the end of the corridor leading to the stairs; the second view is at the foot of the stairs.

Charles Parker. Villa Rustica: Selected from Buildings and scenes in the Vicinity of Rome and Florence. 2nd ed. London: John Weale, 1848.

Parker was both architect and writer. In his youth he had spent time in Italy, an experience which was later expressed in his views of Italian domestic architecture in *Villa Rustica*. The work was an important influence on the Italianate style in early Victorian architecture.

Giovanni Giacomo de Rossi. Insignium Romae templorum prospectus exteriores interioresque a celebrioribus architectis inventi. [Romae: s.n.], 1648.

G.G. de Rossi's work is a study in plan, section and elevation of the great baroque churches of Rome, including St. Peter's, S. Andrea al Quirinale, and Il Gesù. Shown here is the elevation of Carlo Rainaldi's S. Maria Campitelli.

Samuel H. Brooks. Designs for Cottage and Villa Architecture. London: Thomas Kelly, 1840.

Brooks's work is a guidebook on the design and construction of cottages. Included in this work are plans, sections, elevations, perspective views, details and accompanying information on materials and specifications.

Thomas Hearne. Antiquities of Great-Britain. London: Printed by James Phillips, 1786.

Hearne was a landscape painter and topographical renderer. In his day he was highly regarded and received many commissions. His works are noteworthy for their watercolours and perspective views.

James Paine. Plans, Elevations and Sections of Noblemen and Gentlemen's Houses. London: Printed for the author, 1767.

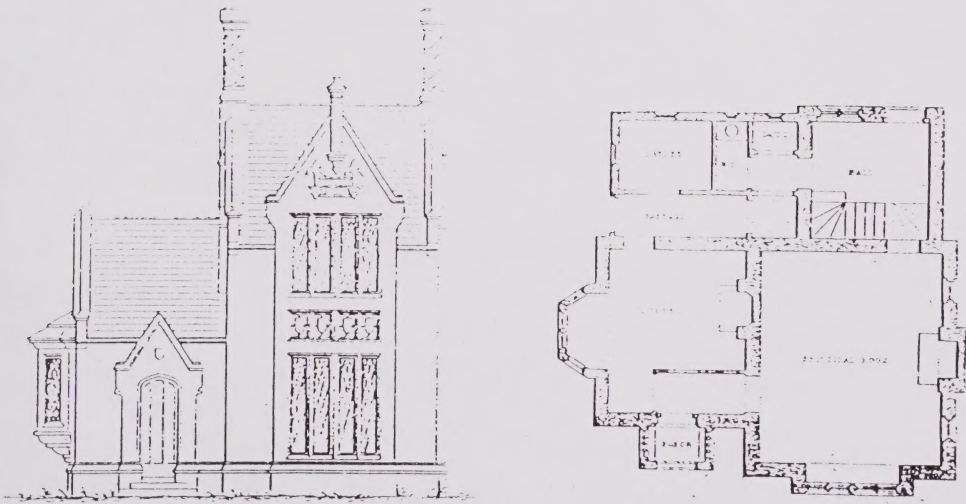
Paine was a talented draughtsman who specialized in the design of large country houses. His houses emulated antique models in plan; however Paine was fundamentally Palladian in spirit. Included in this work are stables, bridges and garden buildings.

Henry H. Richardson. The Ames Memorial Building, North Easton, Mass. (Monographs of American Architecture issued in connection with The America Architect and Building News, III) Boston: Ticknor & Co., 1886.

Notable amongst Richardson's smaller buildings is the Ames Library built in 1877-79. Of particular interest in this building is its material treatment: the exterior of the building is richly expressed through stonework — finished and cut stone in various shapes and patterns. On the other hand, the interior of the library contrasts with the exterior through the expression of wood finishes.

Tallis's History and Description of the Crystal Palace, and the Exhibition of the World's Industry in 1851. London: J. Tallis, [1852] 3 vols.

Paxton's monumental building of glass and iron was built to house the many exhibits of world industry. Tallis's book documents these exhibits as well as the history of the site and of the making of the exhibition.



Plans from *Designs for Cottage and Villa Architecture*, by Samuel H. Brooks.

